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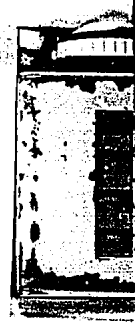

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RADICAL CHANGES IN MATERIALS FOR SOVIET MACHINE TOOL PARTS

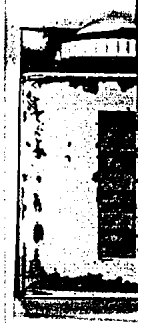
REPLACE BRONZE NUTS FOR LEAD SHAFTS WITH TEXTOLITE NUTS -- Moscow, Vestnik Mashinostroyeniya, Mar 53

The actual operation of screw-cutting lathes and research on them conducted by Soviet scientists have shown that the accuracy of the nut and lead shaft for the cross-slide feed has a substantial effect on the quality of the parts machined on these lathes. The accuracy of the nut and shaft affects the surface finish, conformity to specified dimensions, and shape of the parts machined. The bronze nut operates under unfavorable conditions such as poor protection from dirt, inconvenience in respect to regular cleaning, and insufficient lubrication. These condition shorten its life. In the majority of lathes, the life of a bronze nut usually does not exceed 6-8 months after which it must be replaced.

As a result of deformation under the action of changing cutting conditions, the screw and nut do not maintain their relative position. This makes frequent adjustments necessary and leads to an increase in auxiliary time.

To improve the operating conditions of the cross slide, textolite /resin-impregnated liminated cloth/ has been used as a material for the nut. This material possesses great viscosity. The textolite nut is joined with the cross-feed shaft in such a way that the shaft moves in the nut by the application of normal pressure on the pilot-wheel handle.

The constant tightness of the shaft and nut connection, as well as the increased viscosity of the textolite, considerably improves the operating conditions of the machine tool. The substitution of a textolite nut for a bronze nut has improved the operating specifications of the precision screw-cutting lathe. For example, a high finish in machining has been obtained; the life of hard-alloy tipped cutting tools has increased; auxiliary time has been shortened; the consumption of bronze has been completely eliminated; and machine-tool standstill has been shortened, since after 10 months of operation, the textolite nut has not required replacement.



An inspection of the shaft and textolite nut after 10 months of operation showed that there was no play between them. The nut showed no local wear and the tightness had decreased insignificantly as compared with the original fit.

After the screw-cutting lathe had been equipped with a textolite nut, steel parts (steel 45, 50, etc.) were machined under the following conditions: cutting speed of 200-300 meters per minute, depth of cut of 3 millimeters, and feed of 0.2-0.5 millimeter per revolution.

Results of operating the modernized machine tool showed an increase in its productivity.

Textolite nuts for lead shafts are now being introduced on universal milling and cylindrical grinding machines. -- V. N. Lymzin

MULTIDISK ELECTROMAGNETIC CLUTCHES FOR MACHINE TOOLS -- Moscow, Stanki i Instrument, Apr 53

The advent of multidisk electromagnetic and powder metallurgy (poroshkovyy) electromagnetic clutches represents a radical improvement in this field.

Multidisk electromagnetic clutches were used for the first time in machine-tool building, at the Moscow Krasnyy Proletariy Plant.

At present, multidisk electromagnetic clutches are being used in the following groups of machines: lathes, Models 1620, 164, 163, 1P625, etc.; turret lathes, Models 1326, 1P318, etc.; vertical lathes, Models 1A531 and 1P521; jig boring machine, Model 2465; and milling machine, Model 6P82G.

MACHINING OF PARTS MADE OF SORMAYT NO 1 -- Moscow, Stanki i Instrument, May 53

Increasing the wear resistance of friction parts is one of the most important problems now facing machine builders.

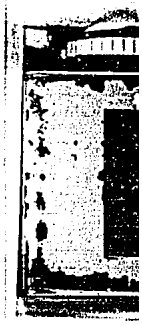
One way of increasing the wear resistance of parts operating under high pressures and at high speeds is the fusion of a special alloy, "sormayt" on the surfaces under greatest strain. At present there are many machine parts built up with sormayt. These include sealing rings, valve seats, various motors, machine-tool centers, etc.

Sormayt is manufactured from nonscarce raw materials. There are two types of sormayt, sormayt No 1 and sormayt No 2. [redacted] for composition and properties of sormayt No 1 and 2.

The following conclusions have been drawn from results obtained after studying the process of machining parts built up with sormayt No 1 at the VNII (All-Union Scientific Research Tool Institute) cutting laboratory.

1. Parts built up with sormayt can be successfully machined with VK8 and VK3 hard-alloy-tipped tools.

2. For productive machining of sormayt, it is very important to have a homogeneous fused layer. The fused sormayt must not have blisters or slag impurities. Internal tensions in the fused layer, which occur in the fusing process, must be eliminated. The fusing process must be conducted in such a way that the microstructure of the fused layer is a carbide eutectic with equally disposed carbides, having a hardness of R_c 49-53 (H_B 477-514).



3. The selection of the cutting tool and the cutting conditions depends on the hardness of the fused layer.

4. Sormayt can be machined on the rigid and powerful machine tools, Models DIP-300 and DIP-500. -- Ye. A. Belorisova and A. Ya. Malkin

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